AMENDMENTS TO THE CLAIMS

Please cancel claims 33-43 without prejudice to pursue these claims in a future continuation application or an already-filed application, and insert new claims 50-79, as follows:

1. (Original) A method for generating one or more images, comprising:

collecting data samples representative of a motion of an object;

acquiring image data of at least a part of the object over a time interval;

synchronizing the data samples and the image data to a common time base; and

generating one or more images based on the synchronized image data.

2. (Original) The method of claim 1, wherein the collecting comprises performing a computed tomography procedure, an MRI procedure, or a PET procedure.

3. (Original) The method of claim 1, wherein the time interval comprises at least one physiological cyclic interval.

4. (Original) The method of claim 3, wherein the at least one physiological cyclic interval comprises one interval within a physiological breathing cycle.

5. (Original) The method of claim 1, wherein the generating comprises constructing a volumetric image.

2

6.   (Original) The method of claim 1, wherein the generating comprises constructing a plurality of volumetric images.

7.   (Original) The method of claim 6, wherein the plurality of volumetric images are displayed in sequence to form a video.

8.   (Original) The method of claim 1, wherein the generating the one or more images is performed retrospectively.

9.   (Original) The method of claim 1, further comprising identifying an interval of interest, wherein the generating the one or more images comprises constructing an image using image data associated with the interval of interest.

10.   (Original) The method of claim 1, wherein the generating comprises using image data that are associated with a phase of the motion to generate an image.

11.   (Original) The method of claim 1, wherein the generating comprises using image data that are associated with a first phase of the motion to generate a first image, and using image data that are associated with a second phase of the motion to generate a second image.

12.   (Original) The method of claim 11, further comprising displaying the first and the second images in a sequence to form a video.

3

13.   (Original) The method of claim 1, wherein the object comprises at least a portion of a

patient.

14.   (Original) The method of claim 1, wherein the object comprises at least a portion of a

structure that is undergoing stress testing.

15.   (Original) A system for generating one or more images, comprising:

means for collecting data samples representative of a motion of an object;

means for acquiring image data of at least a part of the object over a time interval;

means for synchronizing the data samples and the image data to a common time base; and

means for generating one or more images based on the synchronized image data.

16.   (Original) The system of claim 15, wherein the means for generating is configured to

construct an image using image data associated with an interval of interest.

17.   (Original) The system of claim 15, wherein the means for generating is configured to

generate an image using image data that are associated with a phase of the motion.

18.   (Original) The system of claim 15, wherein the means for generating is configured to

generate a first image using image data that are associated with a first phase of the motion, and a

second image using image data that are associated with a second phase of the motion.

4

19.   (Original) The system of claim 18, further comprising means for displaying the first and the second images in a sequence to form a video.

20.   (Original) The system of claim 15, wherein the means for collecting comprises an optical device and a marker block.

21.   (Original) The system of claim 15, wherein the means for acquiring is selected from the group consisting of a CT machine, a MRI machine, and a PET machine.

22.   (Original) The system of claim 15, wherein the means for synchronizing and the means for generating comprises a processor.

23.   (Original) A computer product having a set of stored instruction, the execution of which causes a process to be performed, the process comprising:

      collecting data samples representative of a motion of an object;

      acquiring image data of at least a part of the object over a time interval;

      synchronizing the data samples and the image data to a common time base; and

      generating one or more images based on the synchronized image data.

24.   (Original) The computer product of claim 23, wherein the generating comprises constructing a volumetric image.

25.   (Original) The computer product of claim 23, wherein the generating comprises constructing a plurality of volumetric images.

26.   (Original) The computer product of claim 25, wherein the plurality of volumetric images are displayed in sequence to form a video.

27.   (Original) The computer product of claim 23, wherein the generating comprises using image data that are associated with a phase of the motion to generate an image.

28.   (Original) The computer product of claim 23, wherein the generating comprises using image data that are associated with a first phase of the motion to generate a first image, and using image data that are associated with a second phase of the motion to generate a second image.

29.   (Original) The computer product of claim 28, further comprising displaying the first and the second images in a sequence to form a video.

30.   (Original) A method for generating one or more images, comprising:

    acquiring image data of at least a part of an object over a time interval;

    associating the image data with one or more phases of a motion cycle; and

    constructing one or more images using the image data that are associated with the

respective one or more phases.

31.   (Original) The method of claim 30, wherein the image data is associated with a plurality of phases of a motion cycle, and a plurality of images are constructed.

32.   (Original) The method of claim 31, further comprising displaying the plurality of constructed images in a sequence to form a video.

33-43. (Canceled)

44.   (Original) A method of gating an application of radiation for a CT procedure, comprising:

obtaining signal data representative of at least a portion of a physiological movement to form a set of ordered measurement samples;

comparing the set of ordered measurement samples against prior measurement samples of the physiological movement to determine deviation from periodicity of the set of ordered measurement samples; and

gating CT radiation to the patient if the deviation from periodicity is outside a threshold range.

45.   (Original) The method of claim 44, wherein the physiological movement comprises breathing movement.

7

46.   (Original) The method of claim 44, wherein the physiological movement comprises cardiac movement.

47.   (Original) The method of claim 44, wherein the comparing comprises pattern matching the set of ordered measurement samples against the prior measurement samples of the physiological movement.

48.   (Original) The method of claim 47, wherein the pattern matching is performed using an autocorrelation function.

49.   (Original) The method of claim 47, wherein the pattern matching is performed using an absolute difference function.

50.   (New) The method of claim 1, wherein the collecting comprises using an optical device.

51.   (New) The method of claim 50, wherein the optical device comprises a camera.

52.   (New) The method of claim 50, wherein the optical device comprises a fluoroscope.

53.   (New) The method of claim 30, wherein the constructing comprises using data collected from a computed tomography procedure.

54. (New) The method of claim 30, wherein the constructing comprises using data collected from an MRI procedure.

55. (New) The method of claim 30, wherein the constructing comprises generating one or more volumetric images.

56. (New) A method for processing image data, comprising:

acquiring image data of at least a part of an object over a time interval; and

binning the image data based on a characteristic of a motion of the object.

57. (New) The method of claim 56, wherein the characteristic of the motion comprises a portion of a cycle of the motion.

58. (New) The method of claim 57, wherein the portion of a cycle of the motion is determined using a camera directed at the object.

59. (New) The method of claim 56, wherein the characteristic of the motion comprises an amplitude of the motion.

60. (New) The method of claim 56, further comprising sorting the image data based on a portion of a cycle of the motion of the object at which the image data are acquired.

9

61.   (New) The method of claim 56, wherein the acquiring comprises performing a computed tomography procedure.

62.   (New) The method of claim 56, wherein the acquiring comprises performing an MRI procedure.

63.   (New) The method of claim 56, wherein the acquiring comprises performing a PET procedure.

64.   (New) The method of claim 56, wherein the motion is associated with a breathing activity of a patient.

65.   (New) The method of claim 56, wherein the motion is associated with a cardiac activity of a patient.

66.   (New) The method of claim 56, further comprising generating one or more images using at least a portion of the binned image data.

67.   (New) The method of claim 66, wherein the generating comprises constructing one or more volumetric images.

68.   (New) A method for gating an application of radiation to a patient, comprising:

10

directing a camera at a patient;

generating image data representative of a physiological movement of the patient;

analyzing the image data against an established range interval for applying radiation; and

gating an application of radiation to the patient based upon the analyzing.

69.   (New) The method of claim 68, further comprising locating a marker block on the patient.

70.   (New) The method of claim 69, wherein the marker block comprises two or more markers.

71.   (New) The method of claim 68, wherein the gating comprises predictively actuating a gating component.

72.   (New) The method of claim 68, further comprising determining deviation from periodicity based on the analyzing.

73.   (New) The method of claim 68, wherein the gating is performed based upon an amplitude of the physiological movement.

74.   (New) The method of claim 68, wherein the gating is performed based upon a phase of the physiological movement.

75. (New) A method for collecting image data, comprising:

acquiring image data of at least a part of an object over a time interval; and

sorting the image data based on a portion of a cycle of a motion of the object at which the image data are acquired.

76. (New) A method for applying radiation to a patient, comprising:

determining a period of periodic physiological movement;

defining an interval range over a portion of the period of the periodic physiological movement for applying radiation;

determining an amount of time required to actuate a component of a radiation device such that radiation is applied within the interval range; and

predictively actuating the component to compensate for the amount of time required to actuate the gating component.

77. (New) The method of claim 76, wherein the component comprises a switch operatively coupled to a radiation source.

78. (New) A method for prompting a patient in a physiological activity, comprising:

displaying an image, the image simultaneously showing visual real-time feedback for the physiological activity, and a desired range for the physiological activity; and

prompting the patient to maintain the physiological activity within the desired range.

79.   (New) The method of claim 78, wherein the prompting comprises generating a verbal

instruction using a computer.